RESOURCES AGENCY
BUDGET CHANGE PROPOSAL
FISCAL YEAR 2000/01
Revised per Governor's Budget

TITLE: North Coast Watersheds Assessment

Introduction

The California Resources Agency (Agency), in cooperation with Cal EPA, is proposing to integrate and expand existing watershed assessments on the North Coast across agencies. The purpose is to provide the scientific foundation for collaborative watershed restoration efforts and to better meet the State needs for protecting and restoring salmon species and their habitats under state and federal laws. The recent listing of coho salmon as threatened and the consideration of steelhead listing in the region increase the need for State actions to avoid takings under the Endangered Species Act and to focus state investments in restoration and fish recovery. Listings also increase the complexity and the workload for enforcing the State's Forest Practices Act, protecting beneficial uses for cold water fisheries under the federal Clean Water Act and State's Porter-Cologne Act, and reviewing various land and water use projects for fisheries impacts under CEQA. In addition, the promise of significant new state and federal salmon restoration dollars highlights the need for watershed assessments to ensure these dollars are well spent.

This BCP was developed by a team of managers and technical staff from the following departments with watershed assessment responsibilities for the North Coast: Resources Agency, California Department of Forestry and Fire Protection (CDF), Department of Fish and Game (DFG), Department of Conservation/Division of Mines and Geology (DOC), Department of Water Resources (DWR), and the North Coast Regional Water Quality Control Board of the State Water Resources Control Board (SWRCB).

The team followed these steps in preparing the program in this BCP:
1. Identified and arrayed all existing watershed assessment activities by scale, activity, department and product (Figure 1).
2. Agreed on four common goals for watershed assessments (below)
3. Identified duplication, gaps and needed augmentations in existing programs to accomplish common goals (see also Figure 1).
4. Agreed on products (Figure 2).
5. Identified priority watersheds based on common criteria and identified assessment needs by ownership (Figures 3 and Figure 4).
6. Identified common approaches for sharing data, making data accessible to the public, and working cooperatively with private landowners.
7. Agreed on the Noyo River as pilot watershed to test approach in FY 1999/2000.

Although the scope of the proposed program is for private and state lands only, National Marine Fisheries Service and the Environmental Protection Agency advised the team on related federal programs to ensure State-Federal consistency, and the Forest Service provided advice on lessons learned from the Northwest Forest Plan watershed assessment experience. The Resources Agency and BLM are discussing further collaboration on watershed assessments in light to new federal directives.

The Interagency Team identified the following common goals for the North Coast Watershed Assessment Program:

1) To develop baseline information about watershed conditions, in order to evaluate effectiveness of various programs over time;
2) To guide watershed restoration programs, e.g. targeting grant dollars to those projects which most efficiently and effectively recover salmonid populations, and assisting local watershed groups, counties, etc. to develop successful projects;
3) To guide cooperative interagency, nonprofit and private sector approaches to "protect the best" through stewardship, easement and other incentive programs;
4) To implement laws which require specific assessments:
   - To implement the Forest Practices Act by providing cumulative effects analyses for Timber Harvest Plans, sensitive watershed rules, Sustained Yield Plans, etc (at planning watershed scale);
   - To implement the Clean Water Act and Porter-Cologne Water Quality Act by providing analyses of the assimilative capacity of the watershed as necessary to meet water quality objectives (hydrologic unit or superplanning watershed scale);
   - To implement the Streambed Alteration Act by providing better information about watershed stability and fish habitat (site scale).

The Resources Agency initiated this program in part in response to specific requests from landowners and watershed groups that the State take a leadership role in conducting scientifically credible, integrated assessments which could be used for multiple purposes. This BCP integrates and augments existing watershed assessment programs within proven methodologies and manuals available from each department (see Appendix I). It incorporates CDF's GIS-based "coarse" watershed assessments, funded by the Headwaters/North Coast Enforcement BCP of FY 1999/2000 as the starting point for the assessments, and will apply lessons learned from an interdepartmental watershed assessment pilot on the Noyo River started in 1998. The coarse assessments and Noyo pilot analyses are being coordinated across agencies and will clarify the key data and GIS-based analytical tools necessary for supporting field assessments.

This BCP also implements recommendations of the Scientific Review Panel (SRP) which was created under the auspices of the state's Watershed Protection and Restoration Council, as required by the March 1998 Memorandum of Agreement between the National Marine Fisheries Service (NMFS) and the California Resources Agency. The MOU required a comprehensive review of the California Forest Practice Rules (FPRs) with regard to their adequacy for the protection of salmonid species. The SRP stated that watershed assessment in California should focus on linkages between past and ongoing land use activities, geomorphic processes, aquatic and terrestrial habitat, and responses of the salmonid populations. In effect, the SRP calls for each watershed assessment to develop hypotheses of how linkages work in watersheds. This will improve the analysis of proposed restoration projects or management activities, and will result in better monitoring and subsequent project adjustment.

Watersheds are defined at different scales, with smaller units nesting within progressively larger units. Linkages from larger to smaller watershed units need to be assessed to understand how larger phenomena (such as large rain events upstream of stream crossings or restoration projects) will affect specific sites. Conditions within smaller watersheds may be different than the average conditions across the larger watersheds of which they are a part. Thus, initial working hypotheses based on larger watersheds may need to be revised based on more detailed data collected at finer levels of resolution and vice versa.

The assessment approach will provide a framework that recognizes the need to integrate both fine and coarse scale information. It allows for data to be gathered and analyzed at different watershed scales by participating agencies to inform different types of

decision-making, ranging from program planning to project review, and then aggregated up and down as needed. This feature also addresses concerns by departments that have pre-existing agreements with specific landowners about land access and data sharing. It will allow them to continue to work collaboratively with local watershed groups, and respecting private landowners rights and interests.

This BCP will provide the following processes and products: 1) outreach to local stakeholders on assessment activities, needs, and information sharing opportunities; 2) development of working hypotheses about geologic, hydrologic, fluvial morphologic, fish habitat, water quality, streamflow, and land use effects and compilation and analysis of relevant data; and 3) ways to make information available and user-friendly to landowners, watershed groups and other local stakeholders.

A. Nature of Request

Description and Scope

The BCP requests a total of 56.5 PY and $6.901 million dollars to produce the following information about watershed conditions and functions by the participating departments:

DFG: 21.1 PY and $1,998,000 for limiting factor analyses for river basins and planning watersheds;

DOC: 19.9 PY and $2,661,000 for landslide maps, landslide risk maps, instream sediment maps, and sediment transport analyses for planning and superplanning watersheds;

DWR: 1.9 PY and $382,000 for developing and analyzing river basin streamflows;

CDF: 7.2 and $1,279,000 for capturing timber harvest and land use history, developing cumulative watershed effects frameworks, and producing a Klamath Resources Information System to cover each watershed;

SWRCB: 6.4 PY and $581,000 for compiling and analyzing water quality data and for working with stakeholders to inform, get input, and review assessment products.

The BCP provides resources for assessing state and private watershed lands on the North Coast. For the purposes of this BCP, the "North Coast" is synonymous with the North Coast Region as defined by the CALWATER system, managed by DWR (see Appendix II for a brief description). This also corresponds to the jurisdiction of the North Coast Water Quality Control Board. The agencies will assess North Coast Region watersheds over a period of approximately seven years. The assessments will be conducted on state and private lands, which constitute 6.5 million acres of watershed and 1399 planning watersheds.

Priorities for watershed assessment are based on the potential of the assessments to: 1) help the SWRCB "get out in front" of the court-ordered TMDL implementation; 2) support fish recovery planning by DFG and NMFS; 3) develop improved cumulative impacts analyses as part of Timber Harvest Plans (THPs), especially for plans on non-industrial forest ownerships; and 4) strengthen the information on which DFG can analyze Streambed Alteration Agreements under CEQA. This process resulted in the identification of 8 major watershed areas that need to be assessed next year, and additional areas for years two and three. Assessment areas for subsequent years will also be chosen to continue complementing TMDL implementation, and to incorporate priorities for salmonid recovery as they are identified by NMFS and DFG.

The watershed team prioritized watersheds by relatively large Calwater units, i.e. Hydrologic Units (also known as basins) and Hydrologic Areas (also known as sub-

basins). These are much larger than the "planning watershed units" (classified by Calwater as 3,000 to 10,000 acre drainages) at which scale much of the assessment work will be performed. For the purposes of this BCP, the term "basins" will be used for either of these two major watershed units, and "planning watersheds" when referring to planning watersheds.

The list of priority basins identified for the first three years and their respective state/private acreage are listed here. For more detailed information on acreage and ownership for these basins, See Appendix III.

FY 2000/2001: 982 thousand acres on the Albion, Gualala, Big, and Mad Rivers, Redwood Creek, and the upper, middle and lower forks of the Trinity River;

FY 2001/2002: 906 thousand acres in the Mattole River, the North , Middle and Lower Forks of the Eel River, and coastal watersheds above Shelter Cove;

FY 2002/2003: 830 thousand acres in the Upper and Middle Main Eel River watersheds and coastal watersheds south of Shelter Cove.

Based on the target assessments for the first three years, we will assess at least 900 thousand acres per year or more as we identify additional priorities. At the rate of 900 thousand to one million acres, it will require six to seven years to complete all watersheds on the North Coast. After completion the State will need to reassess and monitor watershed conditions and trends in order to evaluate the success of restoration and recovery programs and to adapt them as needed. The BCP also anticipates ongoing and active outreach with landowners, watershed groups, and the public. Watershed groups are especially important because experience in other states indicates that some of the most important successes and innovations occur from collaboration at the watershed level. As we implement this BCP we will evaluate the options for using local resources from private individual stakeholders, non-profit groups, and local agencies to accomplish this.

Problem

State agencies have at least 19 regulatory programs that address salmonid protection in some capacity, and at least 10 protection assistance programs for private or State lands. Many if not all agencies have adopted watershed-based strategies over approaches that focus on single resources or species. These strategies, in order to be effectively implemented, will require comprehensive watershed assessments.

The State does not have a systematic or standardized watershed assessment program that can provide badly needed information to agencies, landowners, and watershed groups. This fact has been noted in three recent separate studies by 1) SRP (1999), 2) the Watershed Protection and Restoration Council (1998), and 3) CDF Cumulative Effects Task Force (1999). Each of these studies calls for much better coordination and baseline assessment by State agencies at the watershed or landscape level. The lack of this kind of a program severely complicates project evaluation and monitoring. It aggravates public and landowner distrust, and may also lead to, uncoordinated, unnecessary, inefficient, and costly governmental and legal decisions.

Each coastal watershed has a unique combination of environmental conditions and management histories that has contributed to the decline and federal listing of coho salmon and potential listing of steelhead. Major factors in North Coast watersheds which limit one or more stages of salmon and steelhead life cycles include increased sediment, increased temperature, the lack of woody debris, and streamflow and nutrients. Natural and manmade causes include landslides, flooding, and activities such as timber

harvesting, mining, ranching, agricultural uses, and development. To recover these fisheries, it is necessary to assess and understand linkages between management activities and the dominant ecological processes and functions, as well as the real limiting factors on these fish and their habitats.

No one agency has had the mandate or the resources to implement the comprehensive assessment needed. With the exception of staff provided to the North Coast Regional Water Quality Control Board for TMDL development, no staff has been provided for watershed assessment outside of those areas covered by the Headwaters Agreement. Furthermore, there has been no cross-cutting leadership to coordinate assessment across State agencies as well as constituent departments.

Landowners, particularly small non-industrial timberland owners, are likewise limited in their ability to fund and implement comprehensive assessments, and are therefore reluctant to invest in restoration or the necessary mitigation needed to manage their lands. Where industrial forest landowners, watershed groups, or others are conducting assessments, there is no clear process for the State to take advantage of the information produced by those assessments or to quickly provide additional support or guidance for their efforts.

The Scientific Review Panel, in its examination of the State's Forest Practice Rules, asserted the need for watershed assessment to analyze cumulative effects. It said that data collected in the watershed analysis must be done consistently and in a manner agreed to by all parties involved, and recommended that the state sponsor and conduct watershed analyses in all watersheds and take the lead in consulting with federal agencies.

Benefits

This BCP launches a much needed, long-term State strategy for recovery of salmonids and restoration of their habitats, and provides the cabinet level leadership necessary for such an undertaking. It provides the first and most critical step in developing a framework within which interdisciplinary, interagency watershed assessments can be cost-effectively implemented, and from which subsequent planning, restoration, and evaluation can be designed.

This BCP will improve the effectiveness of State enforcement of the Clean Water Act, the Forest Practices Act, and CEQA, and will also ensure that significant new federal and state restoration dollars are targeted towards projects which are cost-effective and scientifically based. It will do this by:

- providing for scientifically credible assessments;
- filling critical watershed information gaps;
- providing data at coarse and fine watershed scales to inform different types of decision making (e.g. program planning, project planning and review, and management);
- making information more readily accessible across agencies.

By focusing on watersheds and limiting factors for salmonid protection and recovery, this BCP will allow project proponents to develop more appropriate proposals and state agencies to make more legally defensible decisions. It implements technical recommendations of both the Science Panel and the Watershed Protection and

Restoration Council, ensures that assessments occur at the right scales, and provides for peer review and outreach.

It increases the likelihood that the State can continue to access private lands to assess watershed conditions, which is essential to comprehensive assessment. In particular, it preserves the ability of those agencies with good relationships or preexisting access agreements with landowners to continue to work independently of more regulatory agencies.

This BCP will improve the way State agencies do business in general by:

- integrating existing assessment activities;
- avoiding duplication of new ones;
- providing a process for agencies to review and agree on data collection formats;
- ensuring that agencies can quickly access data when most needed.

This BCP responds to a series of specific requests from landowners and stakeholders. By providing the impetus and the guidance for coordinated watershed agency assessments, it puts agencies "on the same page" with respect to assessment methods, data, and findings. Thus, it also increases the potential for integrating and coordinating ESA and CWA compliance on by putting agencies "on the same page. These objectives have also been discussed by the California Biodiversity Council.

The BCP will allow the State to get ahead of the regulatory curve on salmonid issues by facilitating proactive restoration by local agencies, landowners, and watershed groups. It does this by:

- providing needed information for landowners, particularly small ones;
- providing outreach ahead of TMDL regulation to encourage best management practices and restoration;
- providing a framework for identifying local and private assessment efforts; and
- providing resources to develop a data access system for local use.

It will also help local agencies in preparing General Plans, and in review land use activities under CEQA.

Finally, This BCP also provides both the framework and the information to make sure that individual private, state and federal efforts truly add up to fish recovery at regional and species population levels. It provides a point from which the State and its constituent Departments can work more effectively with federal agencies to evaluate policies, develop feasible and cost-effective implementation strategies, and invest public dollars across ownerships and jurisdictions.

B. Background

Federal Actions and State Responses

The Federal National Marine Fisheries Service (NMFS) listed Coho salmon as a threatened species under the Endangered Species Act in the central and north coast Evolutionarily Significant Units (ESU) in 1996 and 1997. With respect to the North Coast region described by this BCP, those ESUs extend from the Oregon coast to the Russian River. In 1999, they listed chinook as threatened from Redwood Creek to the Russian River, and are considering listing steelhead. NMFS is required to develop Recovery Plans for these listings. In Phase I they will develop regional standards and management recommendations at the Evolutionarily Significant Units or ESU level which are necessary

for ensuring species population viability. During Phase II, they will work at finer scales to develop implementation strategies where the information developed by this program can be used. DFG is working with NMFS to determine watersheds that may be key to salmonid recovery.

In 1997, the courts settled a lawsuit against EPA by issuing a consent decree that requires that the North Coast Water Quality Control Board develop Total Maximum Daily Loads (TMDL) for 17 water bodies listed under section 303(d) of the Clean Water by 2011. Many of these TMDLs will focus on sediment. While sediment may be a limiting factor for cold water fisheries in many waterbodies, it may not be the major limiting factor; therefore, TMDLs may not fully address the needs of endangered salmonids.

During this period, the Board of Forestry took actions to address overarching questions and legal challenges about the effectiveness of Forest Practice rules to protect salmonids. It commissioned a Scientific Review Panel in conjunction with NMFS to study the effectiveness of rules to protect salmonids. Its Report of the Scientific Panel on California Forest Practice Rules and Salmonid Habitat (June, 1999) concluded that "the primary deficiency of the FPR is the lack of a watershed analysis approach capable of assessing cumulative effects attributable to other non-forestry activities on a watershed scale." It also asserted that "the recent scientific literature indicates a consensus view that cumulative effects are often best addressed in a watershed context…" .

The Science Panel said that watershed assessments should provide: 1) a comparison between historical habitat and current freshwater and estuarine salmonid habitat and how watershed activities have resulted in changes in the condition, 2) an analysis of the extent to which watershed changes may have affected salmonid populations in the watershed, and 3) specific recommendations for management actions necessary to maintain or restore properly functioning fish populations. They recommended incorporating the traditional watershed assessment modules such as fish distribution and life history, roads, mass wasting, temperature, etc, and suggested careful attention to: 1) historical disturbances, 2) integrated analysis of management activities, channel processes, and salmonid habitat, 3) limiting factors analysis, 4) consideration of all watershed activities, and 5) assessment at different scales as appropriate for the resources. The Science Panel indicated that all watershed analyses should be peer reviewed and then certified by a panel of scientists.

The Watershed Protection and Restoration Council (WPRC), a group of state agencies convened by the last administration, had also indicated the need for sound assessments of baseline conditions within each watershed that directly or indirectly affects coho or steelhead populations and their habitat. In a December, 1998 report, Protecting California's Anadromous Fisheries, they recommended that the State: 1) compile and make available existing information regarding watershed conditions and history, 2) provide guidance documents to assist community-based groups, 3) participate in watershed assessment with local stakeholders, 4) determine the status of fisheries and water quality within a watershed, and 5) determine potential impacts and develop positive measures to reach goals.

In addition, in September, 1999 CDF issued Cumulative Impacts Analysis; A Report of the Director's THP Task Force (CDFTF). Key recommendations of this report called for 1) better background information on natural processes, 2) watershed level analysis protocols, and 3) clear guidance on cumulative impacts analysis and related mitigations. The Report noted that neither CDF nor State agencies have completed consistent or systematic watershed assessments that can provide information to project submitters to

guide cumulative impacts analysis. The Report also observes that, absent any guidance from CDF and review team agencies, it will be be very difficult to consistently improve cumulative impact analysis in THPs.

State Development of a Coastal Salmon and Watershed Restoration Program

This Watershed Assessment Program for the North Coast is an early priority action identified by the Resources Agency, various departments, and stakeholders as part of a long-term effort to develop a Coastal Salmon and Watersheds Strategy for the entire Coastal area with listed salmon and steelhead (Oregon Border to Malibu Creek in Los Angeles County). This program will be developed further using the following principles:

Science as a guide: In order for a salmon and steelhead recovery effort to be successful, science must be an integral part of the efforts through several means including: identification of limiting factors for salmon and steelhead, selection of projects based on scientifically derived priorities, review of key issues by an interdisciplinary science panel, periodic evaluation of progress though scientific conferences, design and implementation of a scientifically credible monitoring framework.

Stakeholder input: Stakeholders must be included in all levels of decision-making and watershed management including: designing and implementing a strategic approach for salmon recovery, setting priorities for protection/restoration, evaluating success of efforts, representing private landowners interests, monitoring and outreach, etc.

Interagency approach: All state and federal agencies with significant authorities and programs should be included in a salmon and steelhead recovery effort, including selection of projects for funding and guiding use of existing authorities and programs to accomplish specific on-the-ground results.

Incentive programs and implementation on existing authorities: A successful approach should be built on collaborative, incentive-based approaches coupled with implementation of existing authorities and programs. State and federal entities should coordinate and integrate programs where desirable and provide opportunities for one-stop-shopping so that well-designed plans can meet multiple laws. Enforcement of existing laws is also an important component.

Support for local watershed solutions: Watershed protection and restoration is the underlying principle that will be used to guide implementation. There are many multi-stakeholder watershed efforts within the range of the coastal salmon and steelhead which can be supported and improved upon. Successful watershed efforts must include all major stakeholders and must incorporate five major components: assessment, planning, implementation, monitoring and education/outreach. Watershed efforts may be led by Resource Conservation Districts or non-governmental local groups; no one model will be prescribed.

Support for regional efforts: Regional county efforts are ongoing and provide a good basis for broader regional planning efforts. Counties have important authorities and provide local leadership needed for a successful approach. Other existing regional efforts, such as Fish, Farm and Forest Communities (FFFC), and Northwest Forest Plan Provincial Advisory Committees, may also provide a basis for regional, rather than state, level planning. Solutions must span the entire coastal range of salmon and steelhead.

Reporting and accountability: To be credible, the strategy must include performance measures and assure progress is monitored. Regular reports will track successes and challenges.

The Resources Agency has proposed that all watershed activities in the state share the following basic steps: 1) watershed assessment; 2) development of a comprehensive watershed plan; 3) plan implementation; 4) monitoring, evaluation and adaptive management; and 5) outreach, education, coordination. The Resources Agency envisions that many of the other elements will be accomplished through locally-led efforts and recognizes that many Coastal watersheds have active local efforts built loosely around these steps. As part of this program, the Resources Agency is also submitting a BCP for Healthy Watersheds through Resources Conservation Districts. This would provide additional resources to RCD's which have an excellent track record of working with landowners to develop voluntary conservation plans and management practices. For a more detailed discussion of the relationship of this BCP to other efforts, see "State Considerations".

Relationship to Other Current and Proposed Actions

The North Coast Watersheds Assessment BCP is part of the Resources Agency's overarching Coastal Salmon and Watersheds Program (see attachment). California has committed at least $13 million from the current budget year to coastal salmon restoration. Most of the funding supports DFG's "271 Program" for Salmon and Steelhead Restoration which provides competitive grant funds for restoration projects by individuals, public agencies, non-profits, and tribes. The Resources Agency has identified the need for additional support for local watershed projects, and also to support local government involvement in watershed restoration, and regional watershed planning efforts.

The Coastal Salmon and Watersheds Program includes eight new program actions: 1) science-based assessment, 2) increasing landowner access to watershed and salmon information, 3) expand partnerships with counties; 4) monitoring salmonid populations; 5) improving incentives for landowners; 6) correcting fish passage problems related to streams and small dams; 7) improve enforcement; and 8) demonstrate interagency, coordinated on-the-ground restoration. The North Coast Watersheds Assessment BCP addresses the first and second program actions above, and builds on the 1999/2000 budget which provided permanent resources for CDF to conduct coarse watershed assessments.

Other BCPs for 2000/2001 that are part of the Coastal Salmon and Watersheds Program but are not related to watershed assessment include:

DFG's "Coastal Salmon and Steelhead Restoration" BCP. This BCP provides a total of $2.133 million for 14 positions to coordinate new federal grant monies for on-the-ground salmon restoration efforts and 5 positions to assist with local government and regional restoration planning efforts, and includes $475 thousand to assist counties in developing locally based restoration plans and to publish watershed restoration educational and outreach materials related to DFG's strategic plan. It does not provide support for watershed assessment field work, analysis, and report development as required for a comprehensive, interagency watershed assessment. Assessment data and reports from the North Coast Watersheds Assessment BCP will, however, be made available to help DFG staff evaluate grant proposals and to assist grantees in implementing their projects.

Department of Conservation (DOC) "Resources Conservation Districts Watershed Coordinators" BCP. This BCP provides $2.234 million from the General Fund and 2 PY to promote healthy watersheds. Of this total, $2 million is a baseline augmentation for a competitive grant program to fund watershed coordinators in California's 103 resource conservation districts (RCDs) to serve the conservation needs of their communities, and $234,000 ($217,000 ongoing) is to provide technical assistance and grant administration. This BCP establishes funding to districts as authorized under Chapter 994, Statutes of 1996.

Efforts by Other States, Local Agencies and Private Groups

The Five County Planning Group of Humboldt, Mendocino, Siskiyou, Del Norte, and Trinity Counties has received grant funding to conduct inventories of county roads and fish passage problems as part of their efforts to make sure that county operations comply with ESA requirements. They are also working with state, federal and local agencies to identify priority watersheds for restoration projects. This BCP will incorporate information from their efforts and will, in turn, help focus their prioritization efforts.

Fish, Forests, and Farms Community (FCCC), a landowner and industry-based group that works with Humboldt State University, is developing standardized protocols for assessment and monitoring. They have worked closely with DFG and will be an important group for identifying cost-effective ways to implement and monitor critical factors for fish protection, once assessments have been completed.

California also has the opportunity to build on experiences from other states and the federal government. Two predominant watershed efforts for forested landscapes in the United States are the Washington Watershed Analysis (WWA) and the Federal Interagency Watershed Analysis (FWA). The WWA framework lays out the requirements for steps, operating methods, critical links, and decision requirements for the assessment teams. FWA is not a decision process and focuses more on the structure, composition, and function of ecosystems in a watershed. Both approaches use interdisciplinary analysis and look at interactions over a large area, however, the Science Panel points out that neither methodology provides 'the qualitative linkages among management actions, changes in watershed processes and channel dynamics, alterations in aquatic habitat conditions, and responses of the biota (e.g. salmonid populations)."

Oregon's highly acclaimed watershed and salmon program includes the steps proposed above by the Resources Agency (i.e., assessment; planning; implementation; monitoring, evaluation and adaptive management; and outreach, education, coordination). Their experience highlights the importance of scientifically sound watershed assessments as the foundation for a successful watershed program, and the leadership role that the State can and should play in ensuring their completion.

Massachusetts has also developed a cabinet level Watershed Initiative that provides interdisciplinary teams to implement a five year process of outreach, research, assessment, planning and implementation, and implementation and evaluation. The teams includes state, local and federal, agencies, the business sector, and non-profits. Each of the 27 teams covers an area roughly corresponding to CALWATER's superplanning to hydrologic subarea watersheds which work, in turn, with "stream teams" on finer scale watershed assessments. This cabinet led, cooperative approach has been extremely successful in raising additional resources through

bonds and legislation, and provides good examples for collaboration both for assessment and also at all the other restoration phases.

C. State Level Considerations

The proposed program is a cooperative, coordinated effort between the California Resources Agency and CalEPA. Without this joint cabinet level leadership this effort could not be successful. It includes four Resources Agency departments, the State Water Resources Control Board and the North Coast Water Quality Control Board. Coordination will occur from both Sacramento offices and regional offices as appropriate. Participating agencies have agreed to use the products from this program to supplement and enhance individual agency programs. This joint program will help move the state forward with policies to ESA/ CWA. The State will need to develop additional streamlining policies and practices by making it easier for landowners to use planning and environmental documents to comply with both laws.

Consistency with Department Strategic Plans

DOC: DOC's Strategic Plan identifies, under guiding principles and mission, the development and dissemination of technical information and advice on 1) California's geologic hazards, 2) mineral resources, and 3) land use planning and watershed management. Goals 2 and 5 of the Plan are to help reduce adverse impacts and damage from natural hazards, and to use the highest quality science and technology in the implementation of our mission. Goal 3 is to promote the long-term availability of land, mineral and agricultural resources, including increasing the proper use of mineral resource information in land use policy and regulatory decisions.

DFG: DFG's strategic plan has four themes. One theme is to manage fish and wildlife from a broad habitat perspective. Within that theme there are two goals that specifically apply to a watershed approach and to watershed assessments: 1) emphasize multi-species planning, analysis, and management for large aquatic and terrestrial ecosystems, and 2) focus inventories, research, and resource assessment efforts on high priority habitats, species at risk, and key recreational and commercial species.

DWR: DWR's Strategic Plan Goal 6 is to provide assistance to meet local water needs through the collection, analysis, and dissemination of information on current resource conditions, participation with other agencies and local watershed groups in the identification, and evaluation of factors and conditions in North Coast watersheds. DWR will participate in interagency watershed assessment by focusing on collection, quality control, analysis, and dissemination of data on stream flows and water quality.

CDF: This BCP supports objectives #1 and 3 of CDF's second Goal to "Enhance rural and urban forest, range, and watershed resource sustainability." They are: reduce timber harvest preparation costs for small landowners by 15% between July 1, 1996 and June 30, 2000; and develop a geographic information system (GIS)-based watershed analysis and monitoring tool that will reduce overall costs of meeting regulatory requirements related to cumulative effects and water quality for timber harvesting and vegetation management activities by January 1, 2000. Providing state support for watershed assessments that focus cumulative effects analysis, and making the information available to landowners will considerably reduce costs and improve the cost-effectiveness of landowner efforts to develop appropriate management plans.

SWRCB: This BCP will address goals 1,2 and 5 of the SWRCB and Regional Boards' Strategic Plan: preserve, enhance and restore water resources while balancing economic and environmental impacts; promote cooperative relationships and improve support of regulated community; and establish a more stable and flexible mix of funding sources. It does so by providing supplemental information about fish communities, environmental objectives, and impeding factors, and by providing a process for joint identification of priority problems and issues.

D. Justification

1. Request by Department or Agency:

a) Department of Fish and Game (DFG) is requesting a total of $1,998,000 from the General Fund for 18.0 new positions plus 4 seasonal staff (total 21.1 PY), $100,000 for a one time contract funds, and $50,000 for ongoing contract funding. The BCP will provide for:

- 1 Senior Biologist (M/F) Supervisor, 6 Associate Biologists, 6 Range B Biologists, and 4 years of seasonal aides to compile, collect and gather data to identify limiting factors for fish habitat; to prepare reports and work with other staff and agencies to review and use them; and to develop monitoring protocols;
- 1 Environmental Specialist III, 1 Research Program Specialist I, and 1 Senior Information Systems Analyst to work with DFG, other departments and agencies, and CERES to make data and analytical tools regarding fish populations, in-stream and riparian habitat, and watersheds available on-line;
- 1 Staff Services Analyst to create and maintain public contacts, and provide administrative support;
- 1 Office Technician to provide clerical support;
- $100,000 for developing and executing a web-based data base with University of California at Davis to facilitate watershed information sharing;
- $50,000 annually to field check and update watershed data including riparian mapping.

DFG is the appropriate agency to implement these objectives because it is responsible for identifying salmon and steelhead streams requiring improvement under Section 6922 of the Fish and Game Code. It is also responsible for enhancing them through the Salmon and Steelhead Restoration and Enhancement Program (SB 271), and for providing grant funding for coastal stream restoration planning and implementation under Section 6217 of the Public Resources Code. DFG administers in excess of seven million dollars annually in anadromous fishery restoration grant monies, the preponderance coming from SB 271 and Propositions 70 and 99.. In FY 1998/99 there were approximately 22 site-specific planning projects for salmon and steelhead habitat restoration. DFG also is required to review THPs for impacts to fisheries under the Forest Practices Act.

Restoration dollars historically have been focused on instream or near shore habitat modification, an activity that frequently treats only the symptoms created by upslope problems. Few watersheds have had systematic assessments that describe and/or prioritize factors actually limiting the recovery of salmon and steelhead. This BCP will enable DFG, in concert with sister departments, to define and prioritize limiting factors by planning watersheds and to establish monitoring protocols. DFG will catalogue the data and tools with CERES so that it will seamlessly fit with common data layers for use as Resources Agency departments migrate towards a multi-department enterprise system. The information will be available to state staff responsible for assessing specific projects and plans as well as

DFG will work with CERES to catalogue data and tools, and to integrate these data into a publicly available, web-enabled database. This will be used by participating agencies, watershed groups, restoration specialists, citizens, and others for planning, development and management of restoration programs to recover the State's coastal anadromous fish. These efforts will provide the basis for feedback and adjustment of DFG programs and activities to protect and restore fisheries.

b) Department of Conservation (DOC) requests $2,661,000 from the General Fund for 2000/01 ($2,158,000 ongoing) and 21 positions (19.9 PY) to provide information that supports watershed-wide planning, impact analysis of geologic and geomorphologic features and conditions, sedimentation impact analysis, and assessment of the suitability of stream restoration projects. This BCP will provide for:

- 1.0 Supervising Geologist, 2.0 Senior Engineering Geologists (Supervisor), 1.0 Senior Engineering Geologist (Specialist), and 10.0 Associate Engineering Geologists to prepare maps of landslides, slope stability and landslide hazards, and sediment sources and sediment;
- 4.0 Research Analysts to develop GIS digital maps and data bases of the completed work;
- 2.0 Staff Services Analysts to assist with data collection; and
- 1.0 Office Technician to provide clerical support.

DOC has authority under Chapter 2, Section 2201 of the Public Resources Code to carry out programs, in cooperation with federal, state, and local government agencies, that will reduce the loss of life and property by mitigating geologic hazards and expediting the application of new research results to public policy. DOC mapped landslides and other related geomorphic features for 68 quadrangles in the northern California Coast Ranges between 1981 and 1985. Since 1998/99, DOC has also been under contract with DFG to review and recommend watershed restoration projects and to provide on-ground technical expertise training. Currently, DOC is developing regional scale geologic, landslides and relative slope stability maps for Freshwater Creek and Elk River for use in the Pacific Lumber Company HCP watersheds assessments; Noyo River for development of the Noyo River TMDL; and Amaya Creek in Soquel Demonstration State Forest for CDF.

DOC has the expertise and is in the best position to update existing landslide maps that are now out-of-date due to recent storm and landslide activities, and to provide new landslide hazard maps and sediment transport maps. This will be done by using traditional air photo and field techniques and converting existing and new data into an interagency GIS format with maps and databases accessible to the various planning agencies and user groups. The importance of these products has been underscored by requirements under the Forest Practices Act for Sustained Yield Planning, Program Timberland Environmental Impact Reports, and Timber Harvesting Plan cumulative watershed effects assessments; for development of HCPs to protect coho and steelhead under the ESA; and for development and implementation of TMDLs under the Clean Water Act.

c) California Department of Forestry and Fire Protection is requesting $1,279,000 in FRIF for 6.0 permanent and 1.5 temporary positions (7.2 PY) to assess, in conjunction with other participants, the potential impacts of past and current timber management and other land uses on watersheds as it relates to water quality and fish habitat, and to design a framework for assessing cumulative impacts for each watershed. The BCP will provide for :

- 6.0 Forester II's to review, evaluate, and field check pertinent information such as aerial photos, GIS data sets, THPs, Forest Practice effectiveness monitoring and the Monitoring Study Group results; assess the contributions of forest stand conditions,

timber harvest, roads, and other land uses on current conditions and to develop a framework by planning watershed to assess future cumulative impacts; and to work with public and other agencies to review products;

- 1.5 temporary clerical help to assist with data entry, clerical duties, and maintaining information.
- $500,000 in one-time contract dollars to support the development of CD-Rom based information for local use (KRIS/Coho); and
- 250,000 in ongoing contract dollars to fund work with Forest Sciences Project at Humboldt State University, the UC Forestry Center, and with other California State Universities to develop data layers, tools, and conduct field validations.

CDF is the appropriate entity to provide these components for watershed assessment due to its responsibility for administration and enforcement of the Forest Practice Rules (Chapter 4, California Code of Regulations) on non-federal forestlands. In the North Coast for 1998-99 FY, this included the processing, review, and inspection of 511 THPs, 624 exemption notices, 37 non-industrial timber management plans, 44 emergency notices, 7 new "Option A's", and 5 Sustained Yield Plans (SYPs). Recent court suits have required CDF to improve the quality of cumulative impact assessments and discussions of alternatives. An internal CDF Task Force and the Science Panel found that significant improvements could best be made if watershed assessments were completed. The State Board of Forestry, the policy making arm of CDF, is considering amendments to Forest Practice rules proposed by the SWRCB and based on the Science Panel report. They are also considering the report of the Scientific Team and a strategic plan for statewide monitoring of rule effectiveness.

The 1999-2000 Watershed and Salmon Restoration Strategy BCP, provided CDF with resources to conduct "coarse watershed assessment." This assessment is based on existing or easily expanded data sets and uses GIS approaches to establish some initial working hypotheses about planning and larger watersheds. For example, CDF (1999b) and CDF (1999c) show how GIS data can be used to aggregate planning watersheds for salmonid restoration potential. The GIS tools are most useful at the river basin level where the limitations of coarse level data (accurate to roughly 1/2 acre or 200 foot linear segments) are small compared to the overall area of analysis. Improved planning watershed applications from refined technical models and more accurate data sets (digital elevation models, stream and river networks, rural roads and enhanced vegetation coverage across all ownerships) are rapidly improving the predictive power of the coarse watershed assessments.

Additional substantial gains at the planning watershed level will come from CDF work to provide harvest and related history back to the 1940's. The result will be a tier of interpretive maps and photos that provide a strong analytic basis for developing working hypotheses that will be available to all users and can be modified with more detailed field level data collected by CDF or others. The combination of GIS work now being done by CDF and the detailed harvest history to be done by CDF in this proposed BCP will address one of the most significant points made by SRP. In some watersheds addressing the legacy of past disturbances is more important for the benefit of salmonids than focussing mitigating solely on the effects of current or proposed activities.

c) The State Water Resources Control Board (SWRCB) requests $581,000 in General Fund to provide 6.7 positions (6.4 PY) to compile, interpret and distribute north coast water data for interagency team use, to review team products, and to assist in public outreach and education.

- 1.5 Sr. WRCE, 3.0 AWRCE, and 2.2 Environmental Specialist III to 1) compile, catalogue, and interpret water quality and related data for its relevance for interagency watershed assessment use; 2) review team products related to analysis of watershed processes and functions, human influences on instream and watershed environments, and limiting factors for salmonids, and evaluate their relevance for water quality protection and TMDL development; and 3) provide information to watershed stakeholders on nonpoint source, rangeland water quality and TMDL programs, and assist with workshops to facilitate public involvement in the watershed assessment process.

SWRCB is the appropriate agency to do these tasks because it enforces water quality laws under the Porter-Cologne Act, Division 7, Water Quality of the California Water Code. The North Coast Water Quality Control Board is developing technical Total Maximum Daily Loads (TMDLs) according to a schedule specified by court settlement. Technical TMDLs are being prepared by both the Board and USEPA in 1999 for the Van Duzen, the South Fork Eel, and the Noyo River watersheds, and for the Ten Mile and Navarro Rivers in 2000. TMDLs will be prepared for the Albion, Big River, Gualala, and parts of the Trinity River systems for the year 2001. TMDLs will be developed by the Board for the Mattole, sections of the Klamath, Salmon, Scott and Shasta Rivers between 2002 and 2007. The data collected and generated by this project will be available at a planning watershed scale and can also be aggregated to assist basin planning and TMDL development, although it may not be sufficient for specific TMDL assessments.

c) Department of Water Resources (DWR) is requesting $382,000 in General Funds and 2 positions (1.9 PY) in FY 2000-01 and an additional $75,000 and 0.9 PY for FY 2001-02 for the purpose of determining stream flow and water quality conditions and factors that affect beneficial uses, including coho salmon and steelhead populations and their habitats, in North Coast watersheds. The BCP will provide for:

- 1 Water Resources Technician II - to plan and direct the installation of stream gages; to collect and analyze stream gage data to determine current conditions to use as a baseline in assessing long term changes in flows and water quality; and to communicate and coordinate with other agency participants;
- 1 Water Resources Technician I - to install, calibrate and maintain gages.
- Resource needs for subsequent years will increase as additional gaging stations are added and previously installed gages are maintained;
- $150,000 for equipment.

DWR's participation was requested by other agency team members due to the importance of streamflow data. Some stream flow and water quality data have been collected from some North Coast watersheds, but much of these data are not current due to limited budgets of agencies. Most historic stream gages have been abandoned, and some historic water quality data are of limited value due to detection levels that do not meet current water quality criteria. Other traditional data that aid in evaluation of water quality impacts that would be collected include water temperature, conductivity, turbidity, and dissolved oxygen using continuous recorders. Existing flow gages would be upgraded to include water quality parameters.

DWR's Environmental Monitoring Program measures, collects, evaluates, analyzes, stores, and disseminates water resources data for use in the planning, development, management, and protection of the State's water resources and associated ecosystems. Among its objectives are ensuring that the State's Primary Surface Water Quality Monitoring Network is coordinated with other agencies to avoid duplication of efforts.

2. *Cross-cutting assumptions*

- The assessment area for FY 2000/01 consists of 982,088 acres of state or private land within eight basins. These basins are subdivided include 239 planning watersheds with state and/or privately owned land. Planning watersheds range in size from 3,000 to 10,000 acres.
- Depending on the task and the responsible agency, workloads will be driven by number of basins, total acreage**,** or number of planning watersheds.
- Individual departments of agencies will participate in one or more of the ten tasks identified in Appendix IV:

  a) Prioritize watersheds for restoration
  b) Develop and analyze streamflow data by river basins
  c) Map timber harvest history, evaluate effects, and develop cumulative watershed effects framework
  d) Compile existing pertinent water quality information by basin, and evaluate the use of assessment products for addressing water quality protection needs
  e) Idenitfy, map and analyze landslide data
  f) Map and analyze fluvial morphology and instream sediment data
  g) Identify, analyze, and report on limiting factors for fish habitat
  h) Work with stakeholders to discuss assessment, share data, and review products
  i) Put data into Klamath Resources Information System (KRIS)
  j) Improve internet-based access to watershed information by agencies through CERES.

  Each of these tasks may in turn require additional sub-tasks that will be described by agencies if necessary.
- An ongoing interagency assessment pilot on the Noyo River serves as the basis for establishing standards for assessment techniques, analysis, review, and data sharing, and for estimating workloads. The Noyo has approximately 106,000 acres and 12 planning watersheds. It includes and, once completed, will incorporate examples of landslide mapping, limiting factors analysis, review of timber history and water quality data, KRIS, review of data and reports, and recommendations for cumulative impacts assessment.

3. *Workload assumptions and standards for each agency/department:*

Department of Fish and Game:

- Major emphasis is on the production of limiting factors for each planning watershed; additional tasks include the development of monitoring protocols, assistance to agencies and landowners to use limiting factors information, and improving accessibility of data to agencies through CERES.
- Workload standards are based on DFG's experience with, and appropriate modifications of the following: a) limiting factor assessment for the Noyo pilot described above; b) basin planning in the Russian and Eel River basins which includes stream mapping but does not cover upslope watershed areas; c) administration of contracted assessments under SB 27; and d) assessment protocols from DFG's Watershed Academy.
- Workload is driven by numbers of planning watersheds.
- Workload standards for these activities are about 2 watersheds per month per biologist for limiting factors analysis or 10 biologists to provide primary products for

239 watersheds. Three additional biologists are required for supervision, workplan assistance and outreach, and developing monitoring protocols.

- For workload analysis by objectives, tasks and basins, see Table 1.

Department of Conservation***:***

- Major emphasis is on landslide mapping and analysis, and sediment transport mapping and fluvial geomorphology analysis***.***
- Workloads are driven by acreage.
- The workload standard for landslide mapping are based on similar efforts by DMG, and the standard for fluvial geomorphology and sediment transport mapping is based on Washington State's Watershed Analysis Program and similar work by the Pacific Lumber Company (PALCO) in California.
- Landslide and hazard mapping requires about one month to map 13,000 acres. For 982 thousand acres, this will require about 6.3 geologist PY plus supervision, for a total of 7 PY. DOC used PALCO estimates of 10,000 acres per month and Washington's estimate of 13,000 acres per month for "Level 2 analysis" which is very similar to the assessment proposed by this BCP to establish the workload standard for fluvial geomorphic assessment of 13,000 acres per month. For 982 thousand acres, this will require an additional 6.3 geologist PY plus supervision, for a total of 7 PY.
- For workload analysis by objectives, tasks and basins, see Table 2.

Department of Forestry and Fire Protection:

- Major emphasis will be on evaluation of timber management and land use impacts on watershed and fish habitat, development of cumulative watershed effects assessment framework by CDF staff, and development of KRIS under contract.
- CDF's workload is primarily driven by acreage. CDF's products will focus on forested lands, which constitute about 88% of basin acreage, or about 863 thousand acres.
- Workload standards: CDF estimates that it will take up to 15 days, or 120 hours, for a Forester II plus 28 hours of temporary help to analyze impacts and develop forest-related components of working watershed hypotheses and a cumulative watershed effects framework for every 10,000 acres of forested land. For 863 thousand forested acres, that would require 5.82 Forester PY plus 1.36 temporary clerical PY. Coordination and outreach with public and other agencies to review products will require up to a week per 100,000 acres for a Forester II for a total of 320 hours (.18 PY) plus about 30 hours of temporary help, or approximately 240 hours (.14 PY) .
- CDF's estimate is based on current data interpretation efforts involved in FRAP's "coarse assessment" activities plus a modification of DOC's workload standards of 13,000 acres per month for photo interpretation, mapping, and field checking of 1:24,000 scale data. It is also based on experience with reviewing THPs and SYPs under the Forest Practices Program.
- For workload analysis by objectives, tasks and basins, see Table 3.
- CDF contract dollars will support the following activities: a) capturing and digitizing harvest history for the early 1980's to the present based on existing CDF THP records

and based on aerial photos from the early 1940's to the early 1980's for approximately 5.2 million acres of the north coast ($250,000); DMG proposes to purchase required photos and make them available to CDF foresters; b) capture and organize information using the Klamath Resource Information System framework (KRIS), developed in the early 1990s and currently the most developed and widely used watershed-based information system with a salmonid focus in California. CDF is currently contracting for KRIS development in the Noyo, Big River, and Ten Mile Rivers; it will extend work to other North Coast watersheds as proposed in the BCP ($500,000 one-time contract funds spread over two years).

State Water Resources Control Board

- SWRCB's primary responsibility is to compile, review, interpret, and format water quality data for the interagency assessment, and to review and comment on the usefulness of data and reports by team for implementing water quality protection requirements***.***
- Workload is driven by number of basins, rather than acreage or planning watersheds.
- Workload standards are based on SWRCB experience with 1) developing, analyzing, and contracting studies and data for basin plan updates and TMDL development; 2) team functions and products; and 3) introduction of new programs to the public and encouraging participation.
- The workload standard for these tasks are: 700 hours per basin for data compilation and submission; 2) 430 hours for review of team products; and 3) 290 hours per basin for outreach and education. For 8 basins, that comes to 6.4 PY total.
- For workload analysis by objectives, tasks and basins, see Table 4.

Department of Water Resources

- DWR will install gages and collect data on five basins which the team determined: the Albion, Gualala, Big, and Mad Rivers, and Redwood Creek.
- Workload is driven by the number of gages to be installed, monitored and maintained, and workload standards are based on the current workloads for installing and maintaining stream gages, and collecting and analyzing data.
- Workload standards are 356 hours of a water resources technician II to plan and manage the installation of gages, and analyze the information generated by them; and 356 hours of a Water Resources Technicial I to install, calibrate and maintain gages.
- Gage installation equipment cost standards are: $10,000 for recorder, gage house, and $20,000 for the cableway, for a total of $30,000 per gage. For year two and subsequent years, gage maintenance will require $1,000 in materials for each gage and 0.12 PY per gage installed in year one.
- See Table 5 for workload by basin.

4. Total North Coast Watershed Assessment Workload:

For a summary of all activities by all departments by objectives and basin, see Appendix IV.

E. Analysis of All Feasible Alternatives

1. Do Nothing: This would result in limited, disjointed, and inconsistent watershed assessments. These types of assessments would have limited use for fish recovery because they would not be comprehensive enough – either in scope or area – to address both basin and planning watershed level issues that affect long-term population viability. Without this BCP, the only information available for enforcing environmental protection laws and for recovery and restoration planning efforts would be:

- Out-of-date landslide maps, developed during in the early 80's during drought years will continue to be used for some areas, and no maps will be available for others. No information exists on sediment transport in these areas, nor is it likely to be developed by others on any systematic basis in the near future.

- Inadequate or non-existent streamflow and hydrologic data for many important watersheds. This will impede or confound species recovery, particularly in flood prone systems, by allowing inefficient or unsuccessful restoration investments. Furthermore, data are expected to decrease as a result of reduced USGS funding and support for gages on north coast river systems, and increased maintenance costs in their cooperative program. Current DWR funding and staff levels cannot support additional gages or additional analyses needed to determine trends and changes in quality and quantity, nor will they be sufficient to maintain existing equipment, so number of sites measured will be reduced over time. Other streamflow data collection methods would be more labor-intensive.
- The lack of accurate "limiting factors" analyses limits the effectiveness of evaluating and mitigating timber harvest and other permitted activities in or near stream environments, and will increase the potential for inefficient or ineffective restoration investments in the face of increased restoration funding. With the exception of some long term basin-planning projects on the Eel and Russian Rivers, very little systematic watershed assessment work will be done to ensure that we are picking the best sites and the best restoration projects to reverse the downward trend of anadromous species populations.
- The lack of a credible approach to cumulative impacts assessment will result in continued conflicts and lawsuits over THPs and other activities, and reduces the effectiveness and efficiency of the Forest Practices to protect salmonids and their habitat. CDF's Coarse Watershed Assessments being done by FRAP this fiscal year can frame preliminary hypotheses about how key elements work in the watershed, but do not contain information about past land use history, stream channel stability, and limiting factors to salmonids.

2. Require additional assessment workloads by landowners or local entities.

- CDF and other permitting agencies could request that landowners provide geological and fisheries information to support cumulative impact analysis. This might occur on some but not all of the areas where larger landowners are preparing Sustained Yield Plans (SYP). Furthermore, it is cost prohibitive for smaller landowners. This could also result in piece-meal geological and fluvial morphological analyses, which may be ineffective, at best, and result in incorrect assessments and improperly sited projects, at worst.

- SB 271 funding contains language that encourages private entities to undertake watershed assessment activities to produce prioritized watershed plans. This BCP is intended to compliment the limited private activity that is occurring in this area. The WPRC Science Panel believes that the State is in the best position to provide a consistent, multi-disciplinary watershed assessment approach.
- In an effort to prevent the closure of critical gaging stations over the past six years, DWR has engaged in cost-sharing arrangements with local entities. However, the ability of local agencies to continue in these arrangements is diminishing. Local entities have already informed the Department that approximately half of this money will not be available in the future. Local participation in the program has been strictly monetary, since is not within the local agencies technological capability, or mission, to collect or evaluate data on a statewide basis.

3. Redirect Existing Resources

- CDF's Fire and Resources Assessment Program will redirect .77 CDF PY to this effort: a).25 PY will work with the Resources Agency to manage interagency coordination for the assessment program, and b) .52 PY of the 3 PY funded in FY 1999/2000 for coarse watershed assessment will direct their assessment activities to the planning watersheds in this BCP. Redirection of other CDF staff is not feasible because they are dedicated to monitoring forest practices rules and reviewing more complex THPs and other planning documents.

- Redirection is not feasible for SWRCB or the NCWQCB because most activities are funded with dedicated resources that preclude redirection, and the resources in existing programs are fully committed to meet their existing program. The NCWQCB regional watershed coordinator will, hwoever, assist in this effort by ensuring that products are consistent with other watershed efforts. Additional redirections are not feasible for SWRCB.

- DWR could reduce the number of gage stations being monitored and use the funds saved for the purposes proposed in this BCP. Consistent with this alternative, DWR could initially establish stream gaging and water quality monitoring stations near the mouths of priority streams in the initial year of the program, and in subsequent years establish stations in upstream reaches in addition to maintaining the stations near the mouths of the streams. However, this alternative is not desirable because resources have already been redirected to locations considered critical.

- Redirections are not feasible for DFG because existing watershed restoration staff are fully committed to widely accepted and effective programs.

- Redirection for DOC is not feasible over the long-term because staff are assigned to other specifically funded projects such as THP Review, Seismic Hazard Mapping, etc. However, 0.6 PY has been redirected from Headwaters/North Coast THP Enforcement Program during FY 1998/1999 to conducted the Noyo River pilot study.

4. Reduce the level of effort from six sub-basins a year to a lesser number requiring fewer staff.

If the long term chronic decline of these fishes is going to be halted before high risk stocks wink out and others become listed, time is of the essence. The sooner this effort begins at a large scale effort, the greater likelihood of recovering fish populations to self-sustaining levels.

5. Outsourcing

- Another alternative would be for one or more Resources Agency departments to contract out watershed assessment to private consultants, requiring the establishment of specified protocols and priorities similar to the approach by the North Coast Regional Water Quality Control Board and Environmental Protection Agency in the development of sediment budgets as part of the TMDL process on the North Coast. This alternative would require contract funding and a redirection of agency staff to develop protocols, manage contracts and work with contractors to obtain private land access in many locations. Based on past experience, landowners may be unwilling to grant access to contractors. Worse, the alternative does not address the SRP observation that work done jointly by State agencies would help foster consistency and confidence in resulting work products.

- The North Coast RWQCB could hire a contractor to scan existing files, place them on a CD ROM and develop a way to catalogue the data such that it would be accessible to the Resources Agency in its watershed assessment activities. A contractor could also be hired to conduct the public outreach, education and participation activities. Because watershed assessment and public outreach and education activities require accessing private and public lands and direct interaction with landowners, the individuals working with the landowners are directly representing the State and communicating the Board's and the Administration's views policies. Due to the high profile, public contact nature of these activities it would be more appropriate to use staff who can make commitments on behalf of the State.
- Contracting for additional gaging stations with USGS will be at the Survey's full cost, which is 25% higher than the Department's. This is not recommended.

6. Provide funding augmentation for staffing and some contract work as follows:

- DFG: 21.1 PY and $1,998,000 for limiting factor analyses for river basins and planning watersheds;
- DOC: 19.9 PY and $2,661,000 for landslide maps, landslide risk maps, instream sediment maps, and sediment transport analyses for planning and superplanning watersheds;
- DWR: 1.9 PY and $337,000 for developing and analyzing river basin streamflows;
- CDF: 7.2 PY and $1,279,000 for analyzing timber harvest and other land use effects, recommending a cumulative watershed effects framework, and producing a Klamath Resources Information System for each watershed;
- SWRCB: 6.3 PY and $581,000 for compiling and analyzing water quality data for watershed protection for salmonids, for reviewing assessment products for their utility for water quality protection, and for working with stakeholders.

Recommendation

The Resources Agency recommends Alternative 6. All agencies must participate to make this successful, and the proposed combination of staff and contract dollars are

necessary to 1) conduct timely, consistent, cooperative interagency watershed assessments for the entire north coast; 2) produce the full range of data, maps, reports, and analytical frameworks needed to protect and restore salmonids ; 3) make information available in formats that are user-friendly to local stakeholders in each basin and also to agencies, and 4) conduct public workshops and educational outreach to ensure that products are accurate, comprehensible, and useful.

APPENDIX I

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APPENDIX II

ORIGIN AND DESCRIPTION OF CALWATER

CALWATER is a geographic information system (GIS) developed to establish a common set of watershed definitions. CALWATER includes the State Water Resources Control Board watershed delineation system.

The term "watershed" is generally defined to be any area of land that drains to a common point. CALWATER divides the State into four levels (hydrologic regions, hydrologic units, hydrologic areas, and hydrologic subareas) and captures the State Water Resources Control Board (SWRCB) delineation. “Watersheds”, as commonly used in this system, are smaller than a river basin or sub-basin but larger than a drainage or site. The smallest units, planning watersheds are generally about 3,000 to 10,000 acres in size. Super planning watersheds are on the order of 50,000 acres in size. The hierarchical nature of this system means that smaller units of watersheds are nested inside larger units.

The current version of CALWATER was released September 21, 1998. The next version of CALWATER (version 3.0) will rectify existing (minor) differences between the U.S. Geological Survey delineation of watershed units and the SWRCB map.

APPENDIX III

Total Acreage and Ownership for Watersheds to be Assessed for First 3 Years

Year 1	**Federal**	**Private**	**State**	***State and Private***
ALBION R		27,530		***27,530***
BIG R	1,177	89,214	25,584	***114,798***
GUALALA R	181	190,924	38	***190,962***
MAD R	116,493	206,460	162	***206,622***
REDWOOD CR	73,132	101,268	6,630	***107,898***
Upper Trinity River	300,095	159,189	594	***159,783***
Lower Trinity River	593,676	61,020	391	***61,411***
Middle Trinity River	76,113	112,801	283	***113,084***
subtotal: state and private				***982,088***
Year 2				
North half coastal stream	32,644	295,297	8,454	***336,395***
MATTOLE R	30,468	157,471	1,931	***159,402***
North Fork Eel River	93,429	87,304	226	***87,530***
Middle Fork Eel River	295,828	185,254	1,274	***186,528***
Lower Eel River	649	183,862	6,591	***190,453***
subtotal: state and private				***960,308***
Year 3				
Upper Main Eel River	212,866	240,025	840	***240,865***
Middle Main Eel River	27,021	305,744	588	***306,332***
South half coastal streams	4,259	230,044	30,597	***264,900***
subtotal: state and private				***812,097***
Totals	1,858,031			***2,754,493***